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## National 5 Maths Straight Line

SQA past paper and specimen paper  
questions and answers by topic

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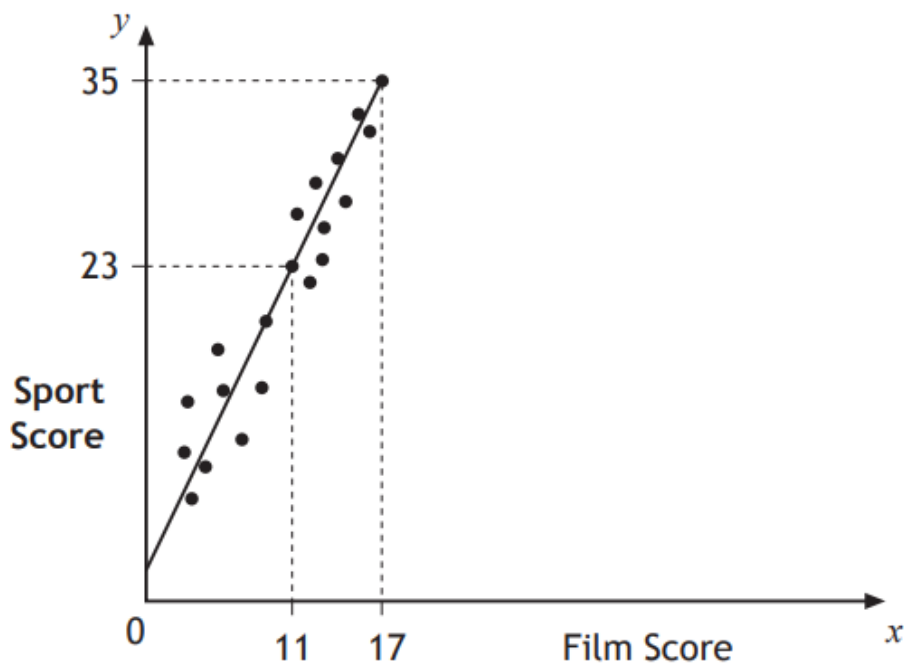
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Teams in a quiz answer questions on film and sport.  
This scattergraph shows the scores of some of the teams.



A line of best fit is drawn as shown.

- (a) Find the equation of this straight line. 3
- (b) Use this equation to estimate the sports score for a team with a film score of 8. 1

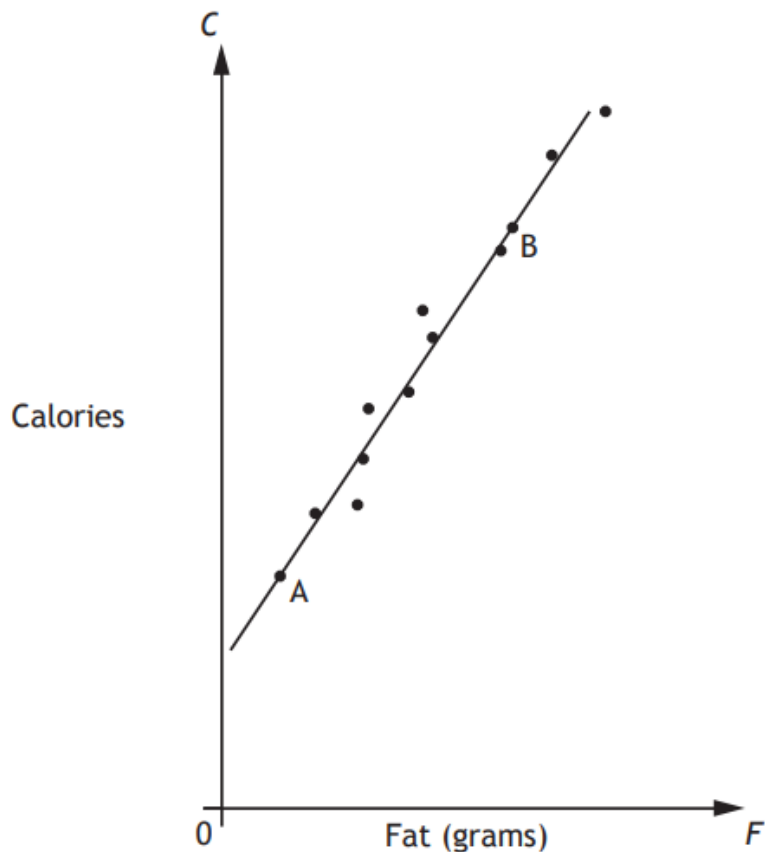
Answers:

- (a)  $y = 2x + 1$  or equivalent
- (b) 17

National 5 Maths  
SQA 2014 Paper 1  
Question 6

McGregor's Burgers sells fast food.

The graph shows the relationship between the amount of fat,  $F$  grams, and the number of calories,  $C$ , in some of their sandwiches.



A line of best fit has been drawn.

Point A represents a sandwich which has 5 grams of fat and 200 calories.

Point B represents a sandwich which has 25 grams of fat and 500 calories.

(a) Find the equation of the line of best fit in terms of  $F$  and  $C$ . 3

(b) A Super Deluxe sandwich contains 40 grams of fat.

Use your answer to part (a) to estimate the number of calories this sandwich contains.

Show your working. 1

Answers: (a)  $C = 15F + 125$       (b) 725 calories

**National 5 Maths**  
**SQA 2014 Paper 1**  
**Question 11**

- 
- (a) A straight line has equation  $4x + 3y = 12$  .  
Find the gradient of this line. 2
- (b) Find the coordinates of the point where this line crosses the  $x$ -axis. 2
- 

Answers:

- (a)  $-\frac{4}{3}$
- (b)  $(3, 0)$

**National 5 Maths**  
**SQA 2015 Paper 1**  
**Question 8**

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Find the equation of the line joining the points  $(-2, 5)$  and  $(3, 15)$ .

Give the equation in its simplest form.

**3**

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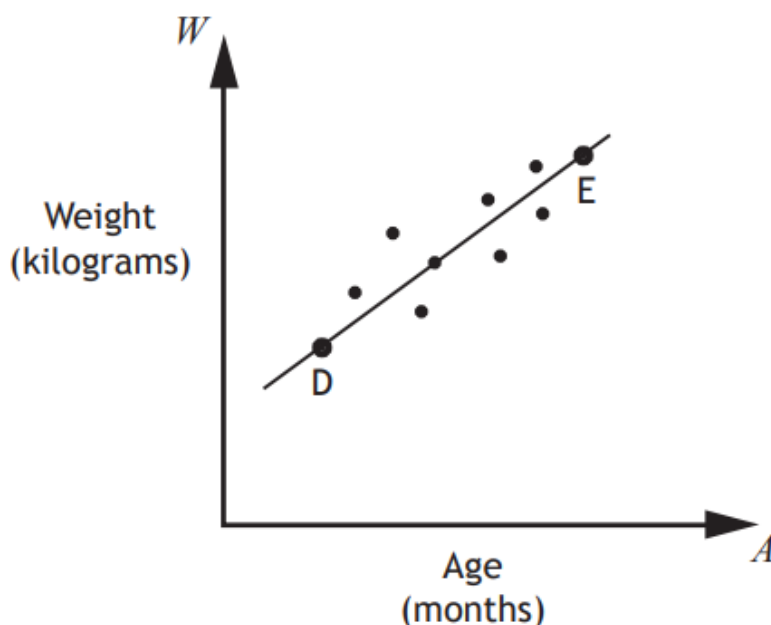
Answer:

$$y = 2x + 9$$



A cattle farmer records the weight of some of his calves.

The scattergraph shows the relationship between the age,  $A$  months, and the weight,  $W$  kilograms, of the calves.



A line of best fit is drawn.

Point D represents a 3 month old calf which weighs 100 kilograms.

Point E represents a 15 month old calf which weighs 340 kilograms.

(a) Find the equation of the line of best fit in terms of  $A$  and  $W$ .

Give the equation in its simplest form.

3

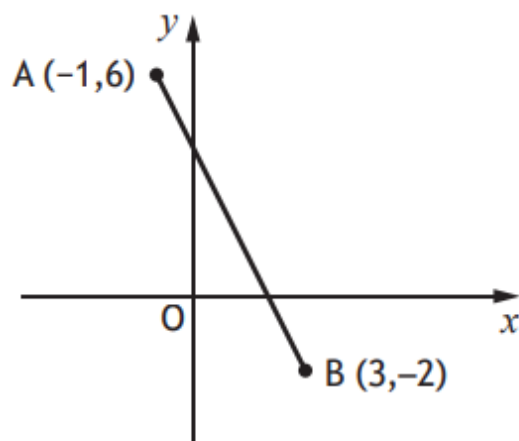
(b) Use your equation from part (a) to estimate the weight of a one year old calf.

Show your working.

1

Answers: (a)  $W = 20A + 40$  or equivalent (b) 280 kg

The diagram below shows the straight line joining points A and B.



Find the equation of the line AB.

Give the equation in its simplest form.

3

Answer:

$$y = -2x + 4 \text{ or equivalent}$$

**National 5 Maths**  
**SQA 2017 Paper 2**  
**Question 11**

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A straight line has equation  $3x - 5y - 10 = 0$ .  
Find the gradient of this line.

2

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Answer:

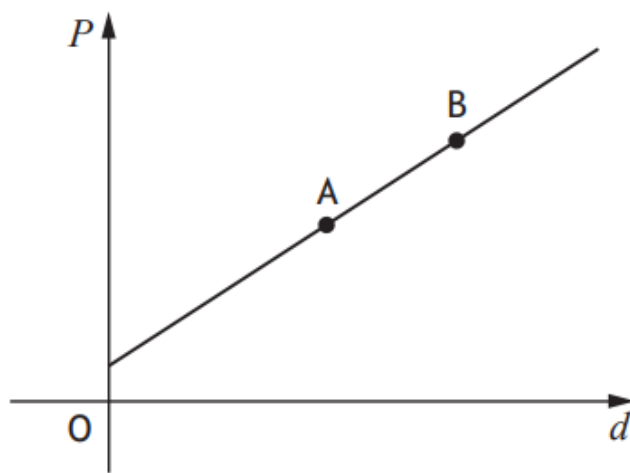
$\frac{3}{5}$  or  $0.6$





The cost of a journey with Tom's Taxis depends on the distance travelled.

The graph below shows the cost,  $P$  pounds, of a journey with Tom's Taxis against the distance travelled,  $d$  miles.



Point A represents a journey of 8 miles which costs £14.

Point B represents a journey of 12 miles which costs £20.

(a) Find the equation of the line in terms of  $P$  and  $d$ .

Give the equation in its simplest form.

3

(b) Calculate the cost of a journey of 5 miles.

1

Answers:

(a)  $P = \frac{3}{2}d + 2$  or  $2P = 3d + 4$  or equivalent

(b) £9.50

**National 5 Maths**  
**SQA 2018 Paper 2**  
**Question 14**

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A straight line has equation  $2x - 5y = 20$ .

Find the coordinates of the point where this line crosses the  $y$ -axis.

**2**

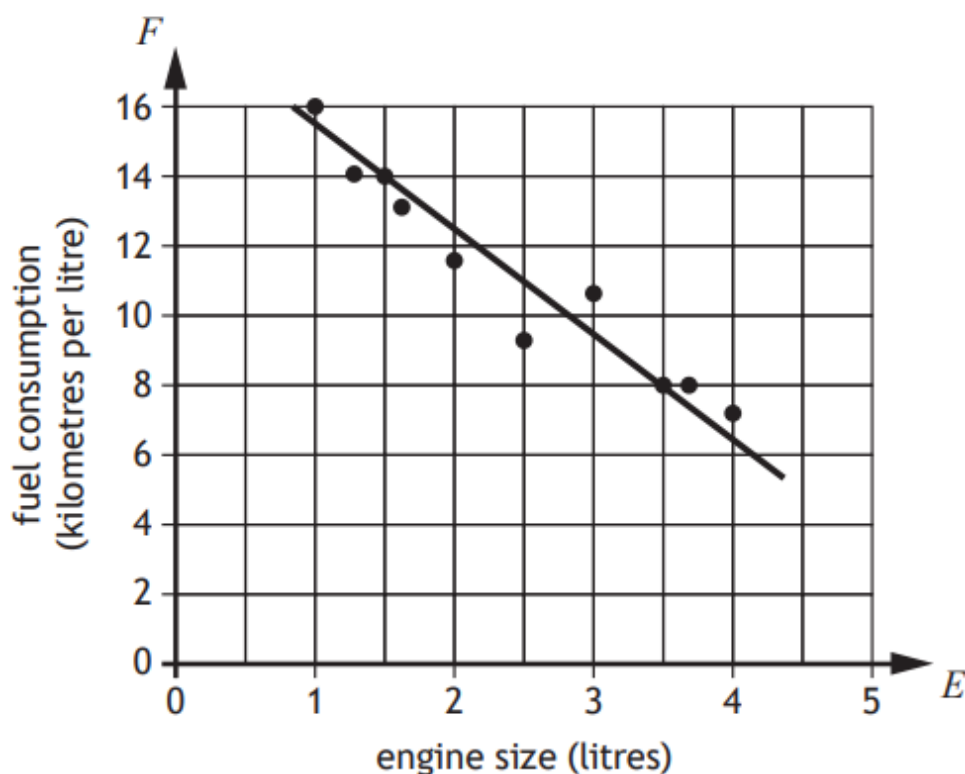
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Answer:

$(0, -4)$

The fuel consumption of a group of cars is recorded.

The scattergraph shows the relationship between the fuel consumption,  $F$  kilometres per litre, and the engine size,  $E$  litres, of the cars.



A line of best fit has been drawn.

(a) Find the equation of the line of best fit in terms of  $F$  and  $E$ .

Give the equation in its simplest form.

3

Amaar's car has an engine size of 1.1 litres.

(b) Use your equation from part (a) to estimate how many kilometres per litre he should expect to get.

1

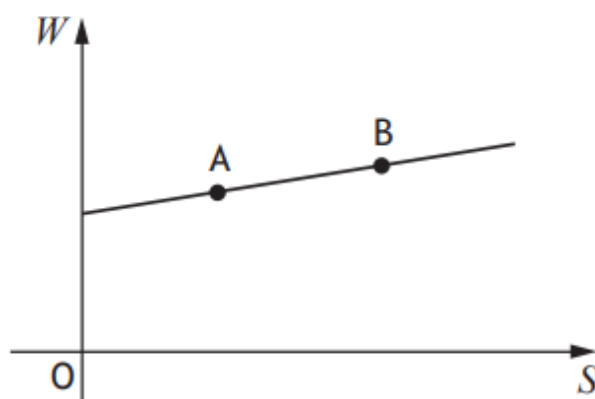
Answers: (a)  $F = -3E + 18.5$  or equivalent (b) 15.2 km/litre



David works in a shop, and is paid weekly.

His wage is made up of a basic wage plus commission on his sales.

The graph shows his wage,  $W$  pounds, against his sales,  $S$  pounds.



Point A represents sales of £6000 and a wage of £450.

Point B represents sales of £7200 and a wage of £510.

(a) Find the equation of the line in terms of  $W$  and  $S$ .

Give the equation in its simplest form.

3

(b) Calculate David's wage in a week when his sales are £1000.

1

Answers:

(a)  $W = \frac{1}{20}S + 150$  or equivalent

(b) £200

**National 5 Maths**  
**SQA 2021 Paper 2**  
**Question 9**

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A straight line has equation  $3x + 4y - 8 = 0$ .

- (a) Find the gradient of the line. 2
- (b) State the coordinates of the point where the line crosses the  $y$ -axis. 1
- 

Answers:

- (a)  $-\frac{3}{4}$  or  $-0.75$
- (b)  $(0, 2)$

**National 5 Maths**  
**SQA 2022 Paper 1**  
**Question 6**

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Find the equation of the line passing through the points  $(-3,-1)$  and  $(-5,7)$ .  
Give the equation in its simplest form.

**3**

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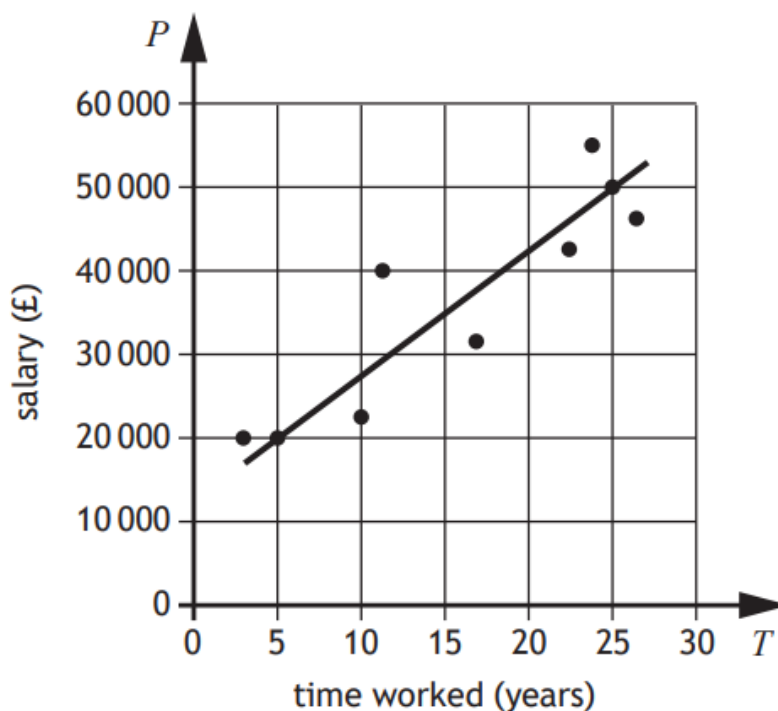
Answer:

$$y = -4x - 13 \text{ or equivalent}$$



A business recorded the salaries of a sample of its employees and the length of time they have worked for the business.

The scattergraph shows the relationship between their salary,  $P$  pounds, and the length of time,  $T$  years, they have worked.



A line of the best fit has been drawn.

(a) Find the equation of the line of best fit in terms of  $P$  and  $T$ .

Give the equation in its simplest form.

3

(b) Use your equation from part (a) to estimate the salary of an employee who has worked for the business for 8 years.

1

Answers:

(a)  $P = 1500T + 12500$

(b) £24 500